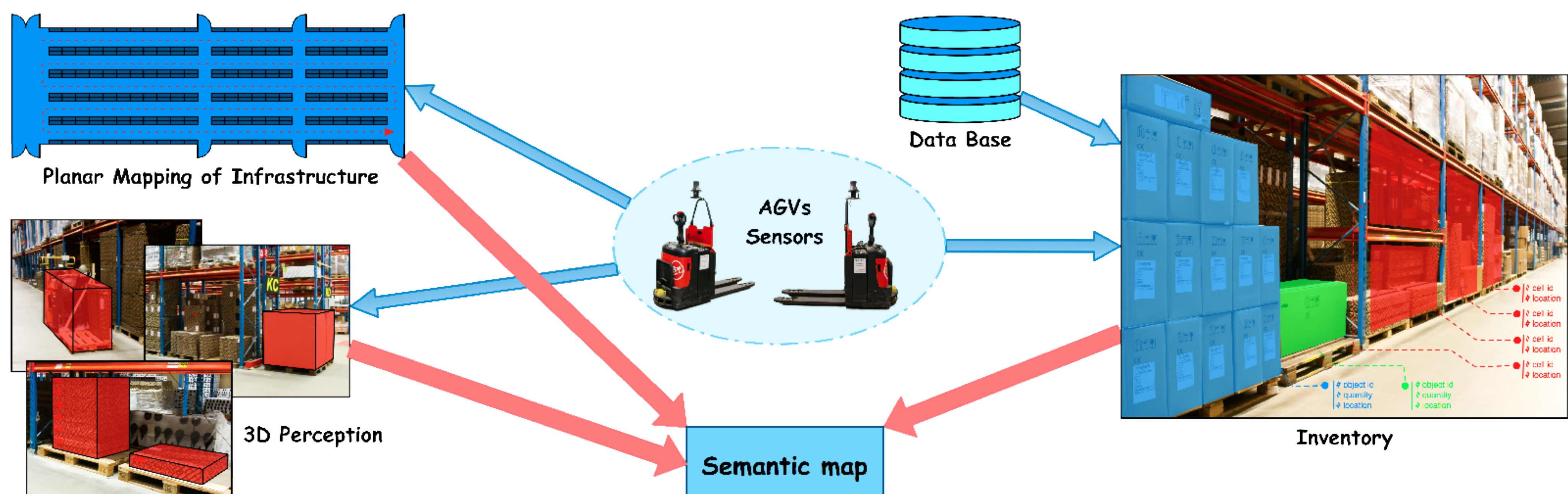


Automatic Inventory and Mapping of Stock - AIMS

in Cooperation with Kollmorgen, Optronic and Toyota Material Handling Europe

CAISR
Centre for Applied Intelligent Systems Research

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AIMS – Overall goal

An intelligent warehouse environment that autonomously builds a map of stock articles, and relates article identity from the database of the management system with the article's position (metric) and visual appearance in the environment.

Motivation

Important skills for future robots and automated guided vehicles (AGV's) are:

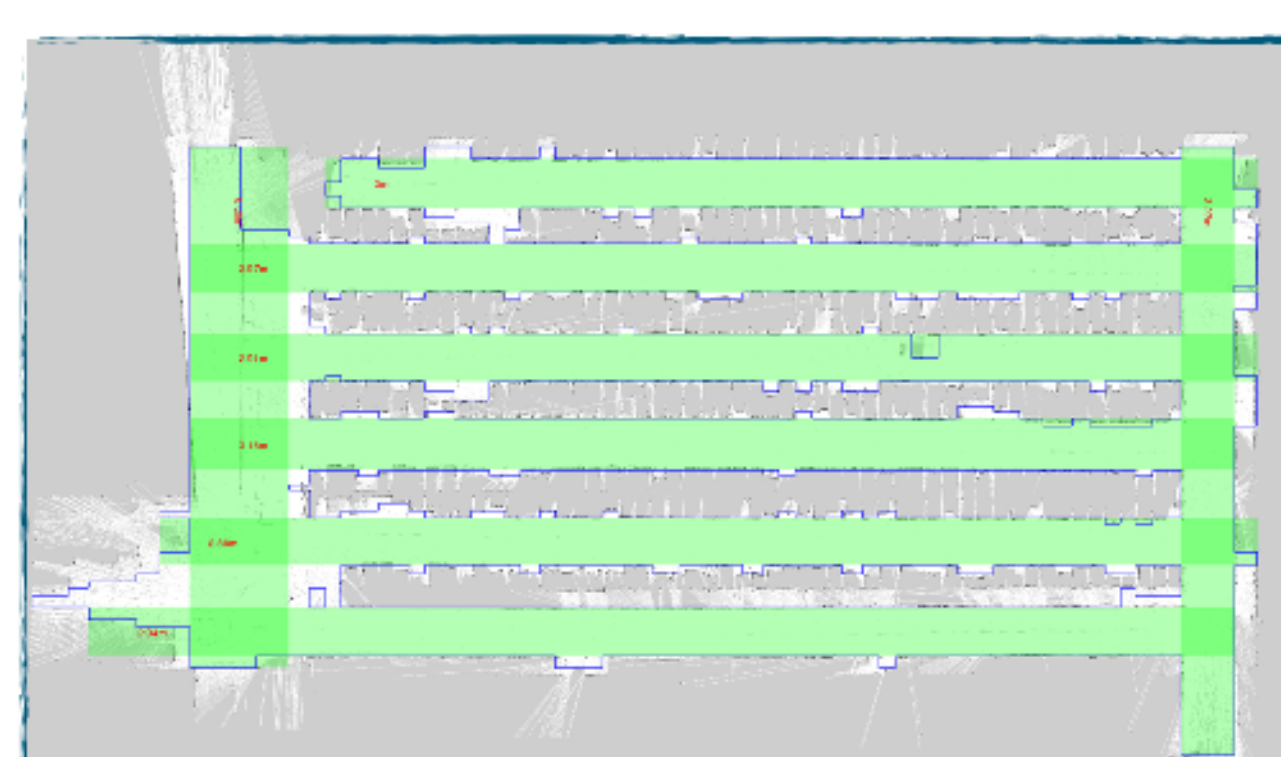
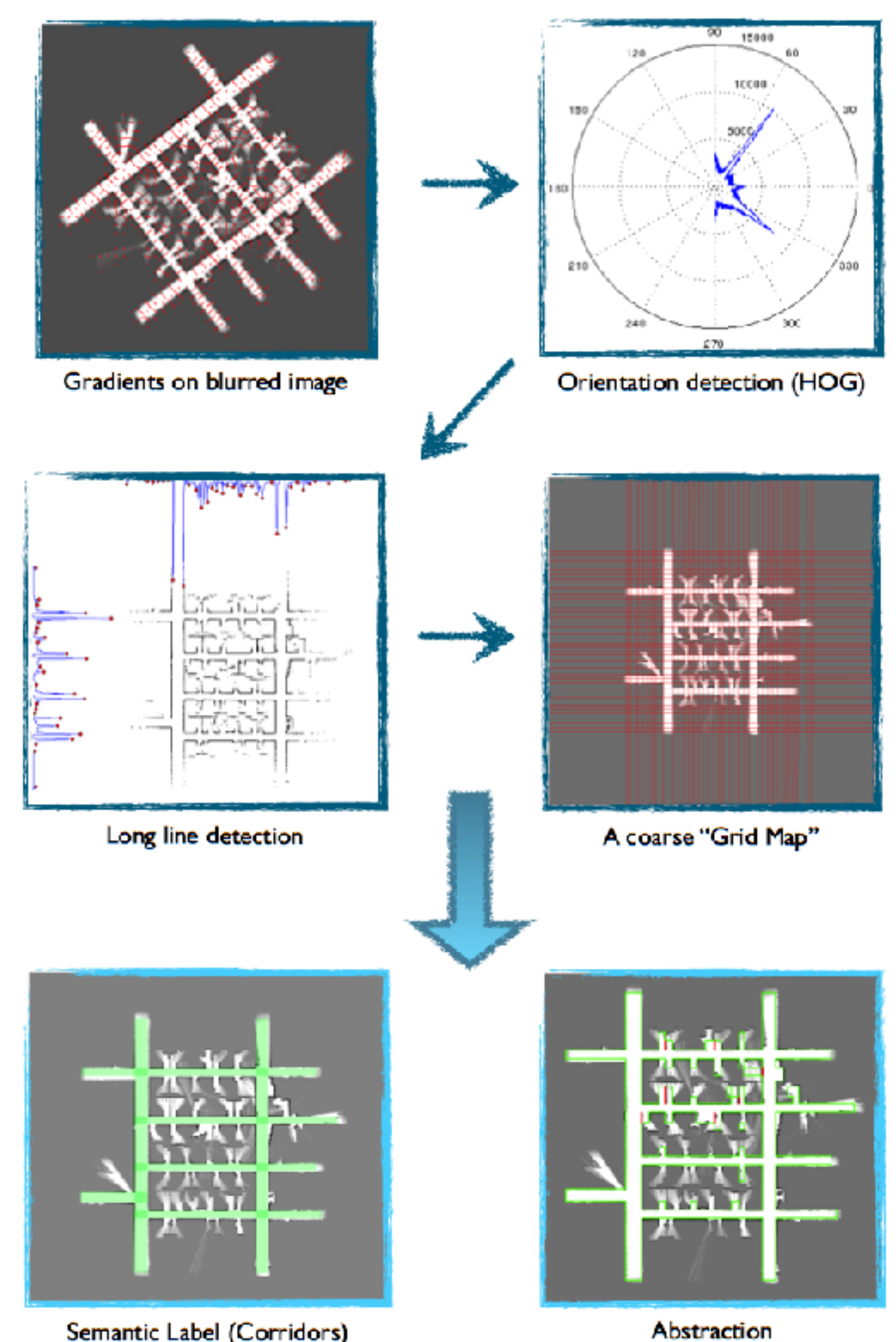
- The ability to recognize and describe objects that the robot shall handle and the environment in which it operates (*situation awareness*).
- The ability to structure and sort information provided by sensors (*flexibility and adaptability*).

Results so far:

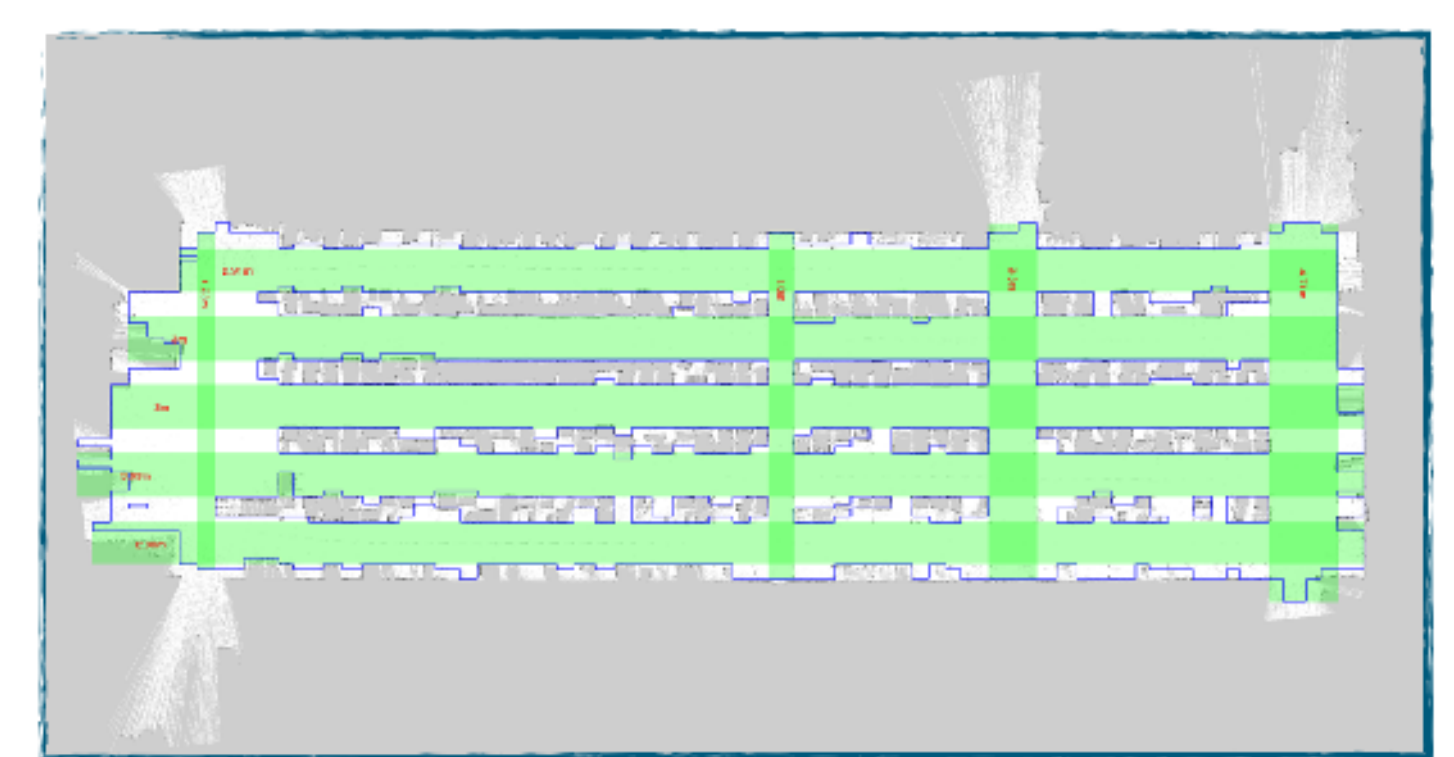
An abstract and semantic interpretation of Occupancy Grid Map (OGM) is provided, in order to speed up the process of AGV installation in the warehouse, as well as a foundation for the ultimate semantic map.

Objective

- **Mapping and localization:** for AGV installation and navigation, and a metric-topological reference to articles' location.
- **Recognition and clustering:** classifying articles in the warehouse, identifying environmental features for localization and topological mapping purpose.
- **3D perception:** for evaluation of the articles' quantity and obstacle avoidance.
- **Dynamic map maintenance:** semantic map includes elements which are varying with respect to time, mainly belong to inventory list or obstacles.



Daily community goods warehouse



Bathroom accessories warehouse